

Low-power, ultra-fast deep learning neuromorphic chip for unmanned aircraft systems, Phase I

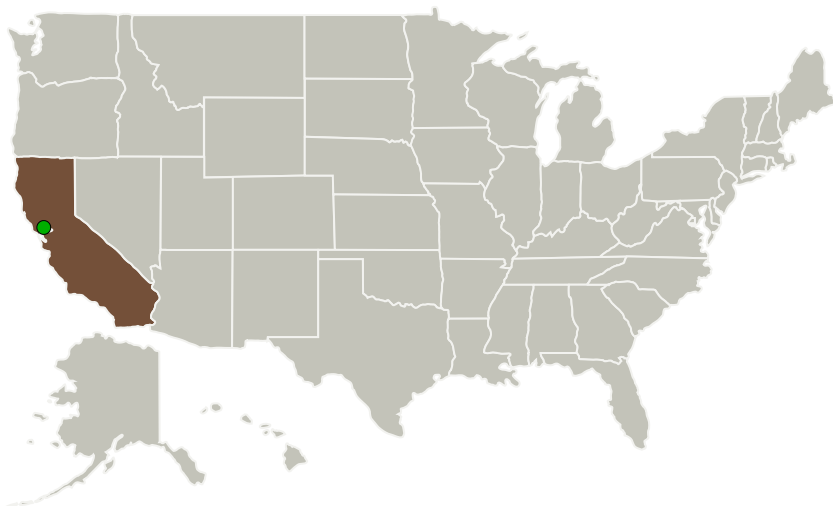
Completed Technology Project (2017 - 2017)



Project Introduction

Artificial Intelligence (AI) is driving the fourth industrial revolution as well as permeating every aspect of our day-to-day life. From big data analysis to language analysis and real time translation, from speech recognition to image recognition. The latter is a powerful and quite general application with a scope that spans from medical imaging to autonomous driving and to military applications. Mentium Technologies Inc., spun from a UC Santa Barbara research lab in the Electrical and Computer Engineering department is committed to embrace the AI revolution strong of the experience of its team in the neuromorphic hardware for AI. Indeed, we will develop a neuromorphic chip able to do higher than real-time image recognition and/or object classification on board the UAS. The chip will use 1/100th of the energy while reaching 100x in speed compared to state of the art. The team already had demonstrated 1000x and 1/1000th energy consumption in a smaller scale experimental demo. From this experience UCSB has a patented technology licensed by Mentium Technologies Inc. thanks to this technology and its development within this project, the Neuromorphic Chip will empower the UAS with Cognitive functions enabling autonomous guidance, decision making and complex image processing, while keeping the power consumption low.

Primary U.S. Work Locations and Key Partners



Low-power, ultra-fast deep learning neuromorphic chip for unmanned aircraft systems, Phase I Briefing Chart Image

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Organizations Performing Work	Role	Type	Location
Mentium Technologies Inc.	Lead Organization	Industry	Goleta, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California

Images



Briefing Chart Image

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(<https://techport.nasa.gov/image/129507>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mentium Technologies Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

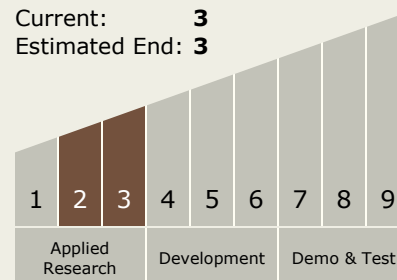
Carlos Torrez

Principal Investigator:

Mirko Prezioso

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.6 Ground Computing
 - └ TX11.6.6 Cognitive Computer

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System